

Final Project Report to the NYS IPM Program, Agricultural IPM 2002 - 2003

Title: WNY Sweet Corn Pheromone Trap Network

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Type of grant: Monitoring, forecasting, and economic thresholds

Project location(s): Chautauqua, Erie, Niagara, Genesee, Orleans, Monroe, Ontario, Wayne, Yates, Tioga, Onondaga, Madison counties

Abstract:

Three of the important insect pests of sweet corn, European corn borer, corn earworm, and fall armyworm, are moths in their adult stage and larvae, or “worms”, in their immature stage, when they cause damage to sweet corn. A network of traps baited with the pheromones that male and female moths use to find each other has been operating across western New York for the past nine seasons. The trap network allows growers, consultants, Cooperative Extension, and processing company field staff to track the flights of the adults of these three pests, and make informed decisions about when sweet corn fields need to be scouted or treated with an insecticide. This project was funded in part by the processing sweet corn industry and in-kind contributions from growers and consultants.

Background and justification:

Sweet corn for the fresh and processing markets is an important crop throughout western NY. Fresh market sweet corn is grown on approximately 32,000 acres in New York with a value of 56.5 million dollars, while processing sweet corn is grown on approximately 17,200 acres with a value of 6.5 million dollars. Three of the major pests of sweet corn, European corn borer (ECB-E and ECB-Z), corn earworm (CEW), and fall armyworm (FAW) are moths in the adult stage and larvae in the immature pest stage, allowing them to be monitored using pheromone traps. Pest management is an especially important aspect of fresh sweet corn production because the unhusked ear is marketed, and the buyer is frequently very sensitive to damage or the presence of larvae in the ear. Harvest quality requirements are different for processing corn, which usually does not need as many insecticide applications as fresh market corn to meet quality standards. In both fresh market and processed sweet corn, pheromone trap catches provide valuable information to growers, consultants, and processor field staff making pest management decisions. Pheromone trap catches help growers and consultants decide when to start scouting fields for ECB, reinforce what scouts are finding, help choose the best spray materials for the pest complex that's present, and alert the industry to the arrival of the two migratory pests, CEW and FAW.

Pheromone trap catches are an integral part of weekly pest update newsletters sent by two western NY extension programs to 260 subscribers in 10 counties. The trap catches were used

by a private consultant handling sweet corn pest management for the two major food processors to time scouting and help make management decisions on approximately 17,200 acres of processing sweet corn.

The trap catches are also posted on the NYS IPM Program web site, the Northeast Weather Association web site, and a regional web site that includes trap catches from several northeastern states, making the information available to a large number of growers and extension personnel.

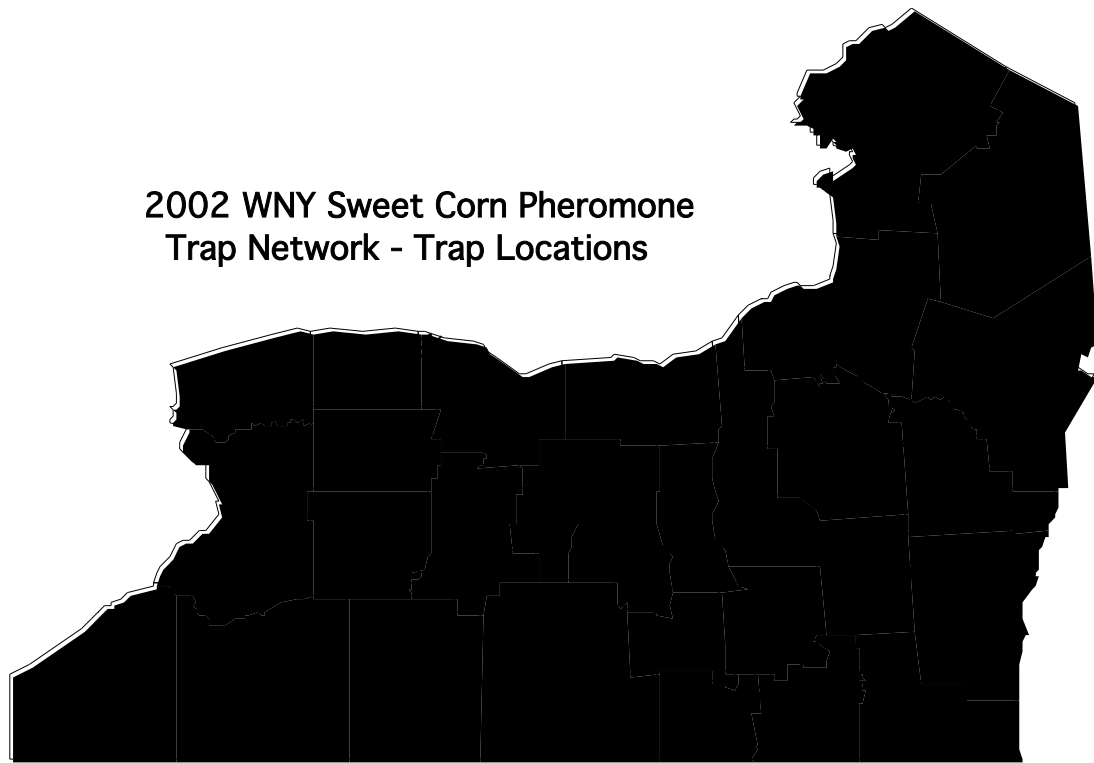
Objectives:

- 1) Establish and maintain a network of pheromone traps for sweet corn pests in western and central NY.
- 2) Provide regional trapping information and recommendations to agents, processor field staff, and consultants working with sweet corn.
- 3) Provide regional trapping information to growers, along with scouting and threshold recommendations.

Procedures:

- 1) Sets of one each of ECB-E, ECB-Z, CEW, and FAW traps were placed at each trapping location (Fig. 1). Scentry Heliothis net traps were used to trap ECB and CEW. The BCS/Agrisense Unitrap was used for FAW. Lures from Trece Inc. were used for both races of ECB, and lures were replaced every two weeks. Lures from Hercon Inc. were used for CEW, and replaced every two weeks. Lures from Scentry Inc. were used for FAW, and were replaced every three weeks. ECB traps were set up in mid-May at some locations, and as processing fields approached tassel emergence in other locations. CEW and FAW traps were set up in early to mid-July. Traps are placed at least 40 meters apart in grassy areas near corn fields, avoiding areas near hedgerows where air circulation is poor. Traps are mounted on posts such that the bottom of the trap is 0-6" above the grassy canopy. When possible, traps were moved to new fields as the previous fields matured and became less attractive to moths.
- 2) Cooperators checked traps weekly on Monday or Tuesday and sent catch numbers to Abby Seaman via phone or email. Weekly catches for each location were collated and posted on Tuesday evening on the vegetable extension staff electronic listserv and the following day on the Northeast Weather Association (NEWA) and Northeast IPM web sites, along with interpretation, and scouting and thresholds recommendations for fresh market sweet corn.
- 3) Information posted on the listserv was incorporated into crop and pest updates mailed weekly by local extension programs to approximately 260 subscribers, or provided to growers via direct contact with consultants.

Figure 1



Results and discussion:

The 2002 growing season started out slowly with a cool, wet spring, but then turned hot and dry from the end of June through September. European corn borer flights started late, and initial catches were low, but then trap catches increased rapidly and numbers were high at most locations, translating into high populations in the field. Low overwintering mortality during the relatively mild winter of 2001-2002 may have contributed to the high populations. Again this season, a few corn earworms were caught early in the season in Erie and Niagara counties, suggesting that there may be some overwintering in our area. Historically, CEW have not overwintered in this area. The major CEW flight started in mid August and quickly reached high levels at many locations, causing the need for short spray intervals to prevent damage. Fall armyworm was first caught in early August, but trap catches were variable between locations, and the flight reached high levels at only a few locations. Graphs of the moth flights grouped by Extension program area are shown in Figure 2.

Figure 2

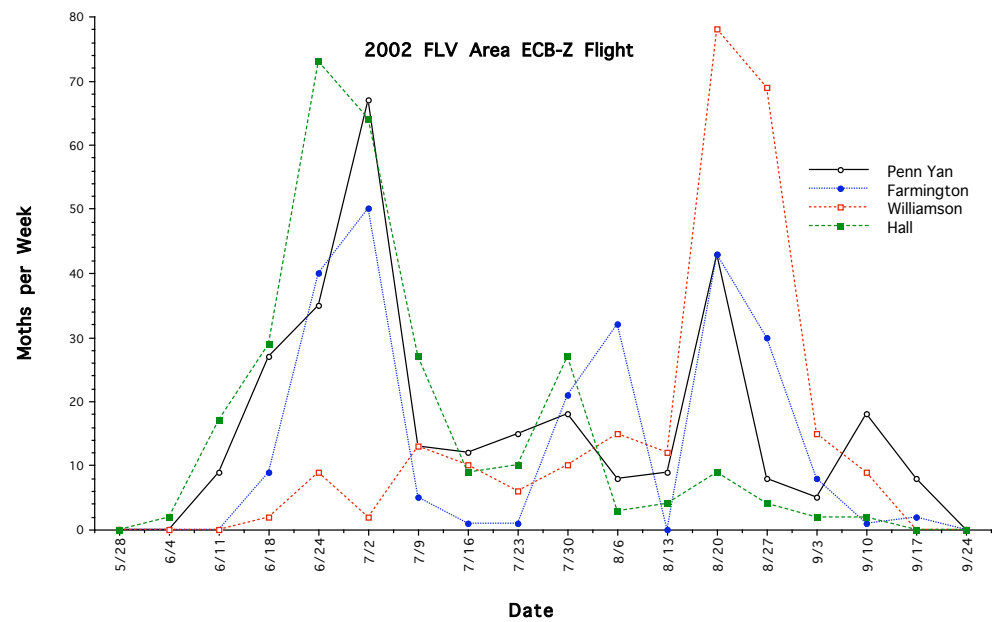
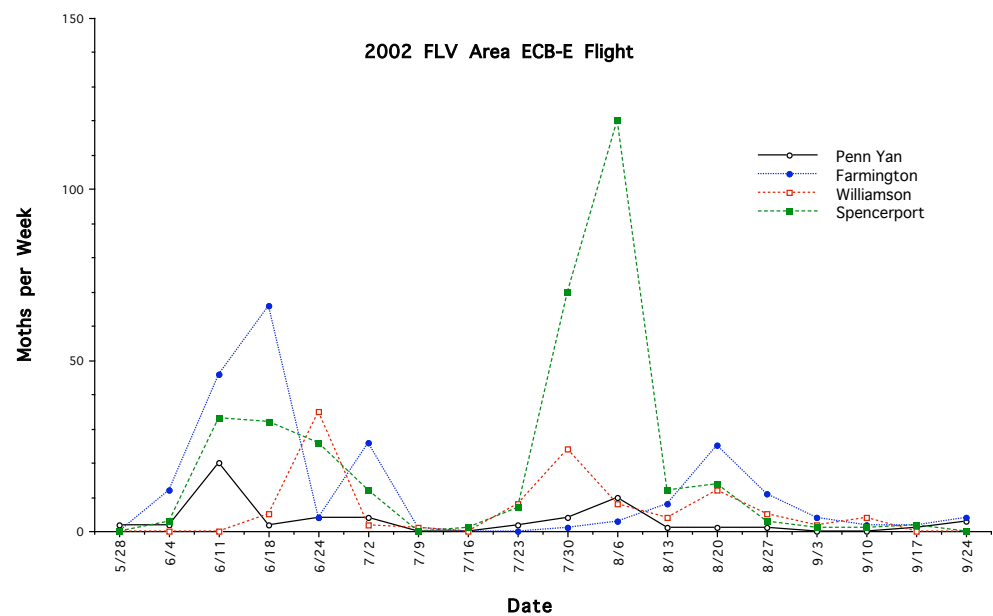


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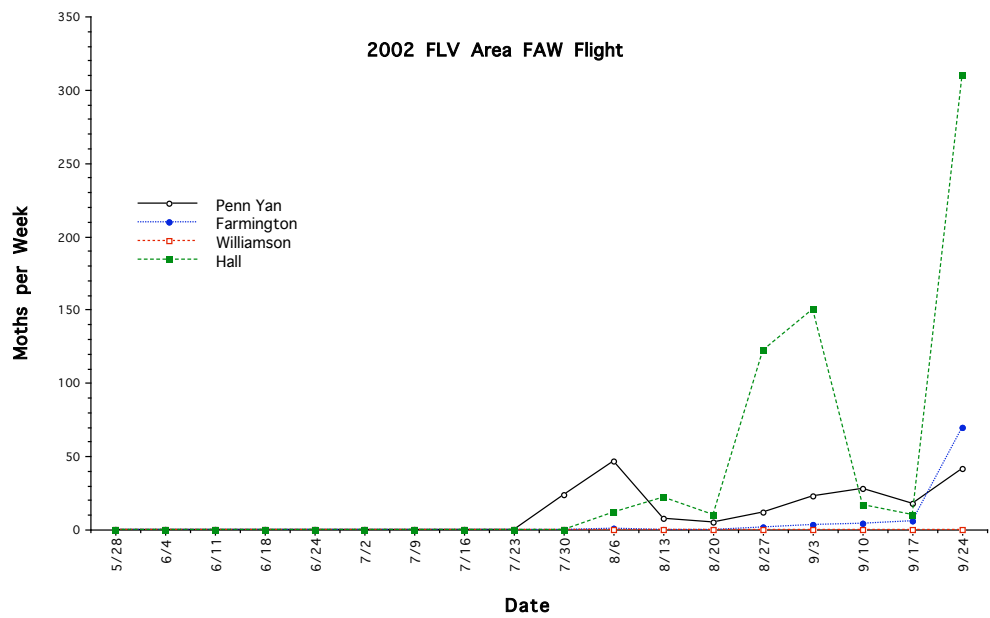
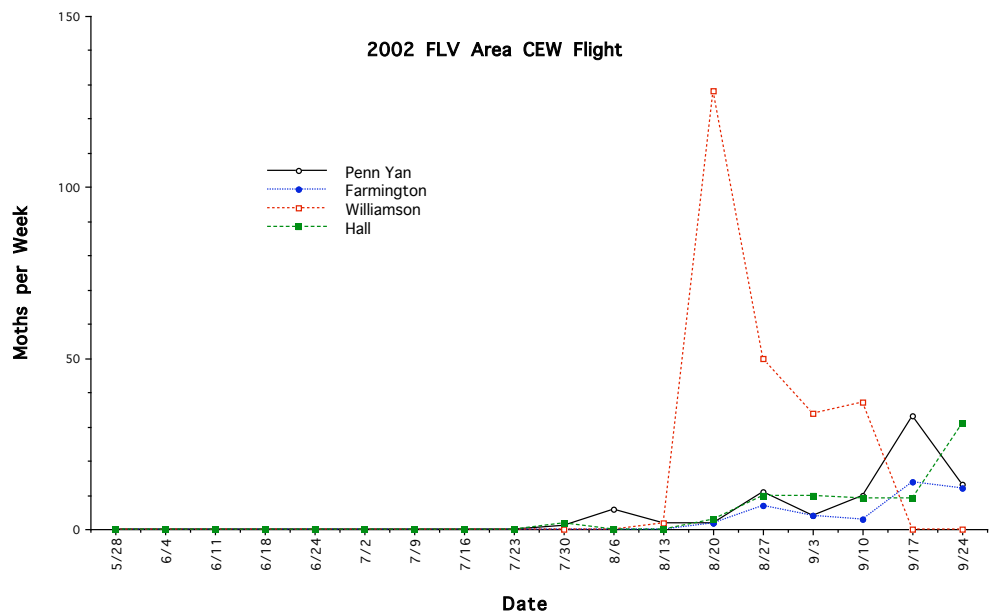


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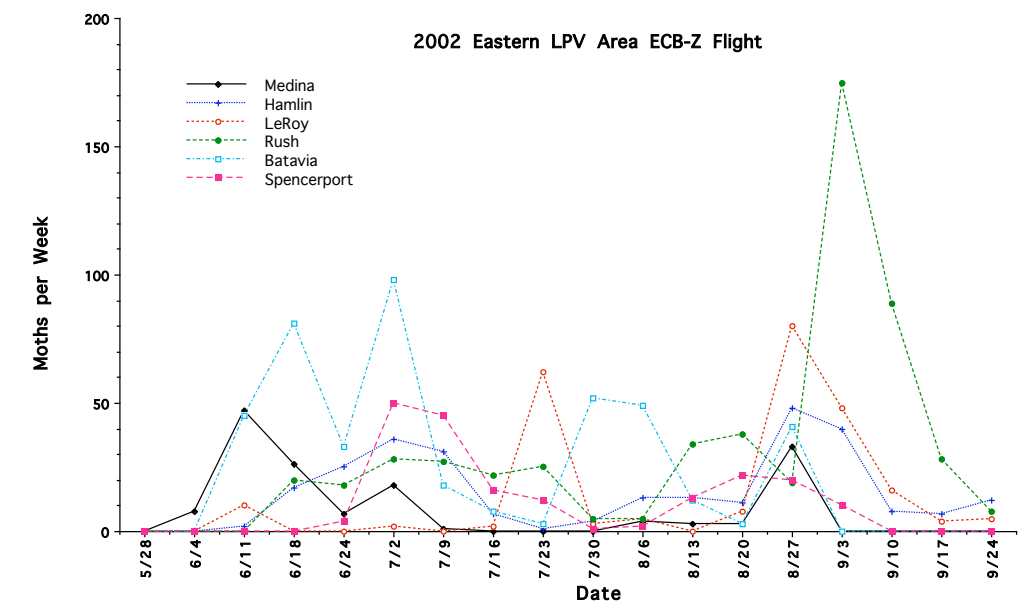
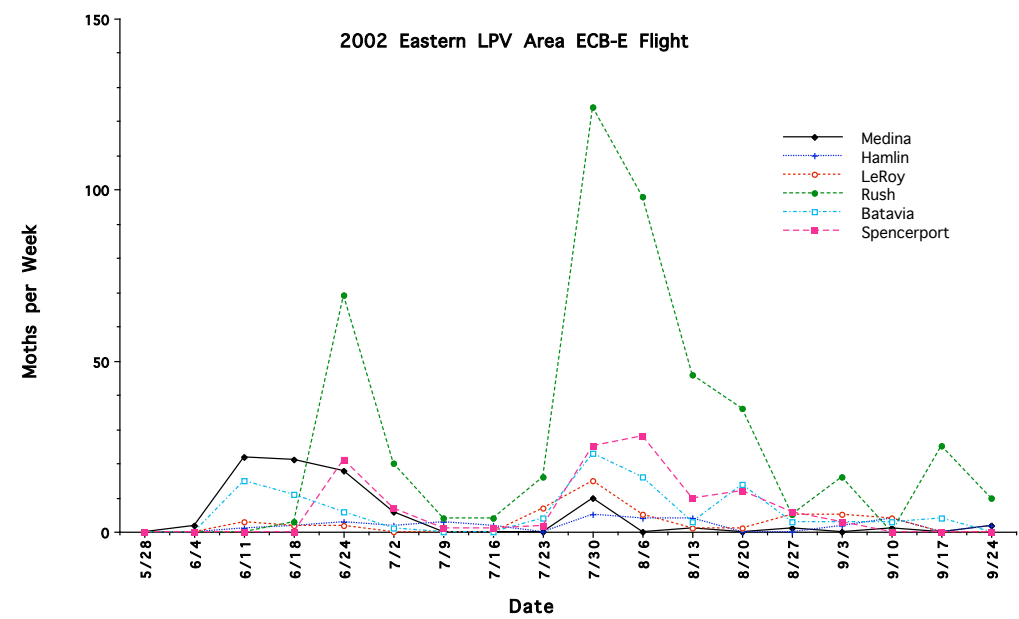


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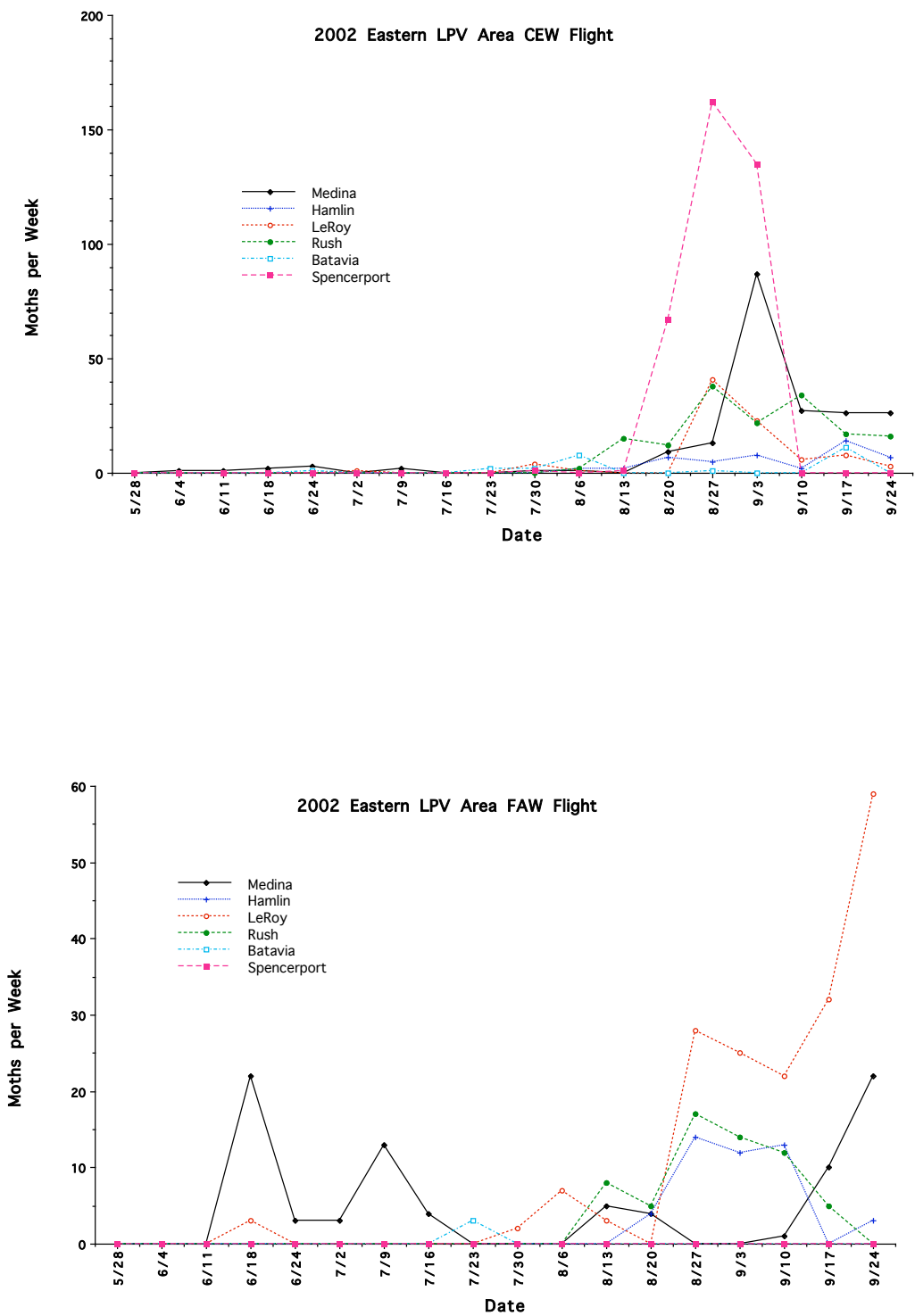


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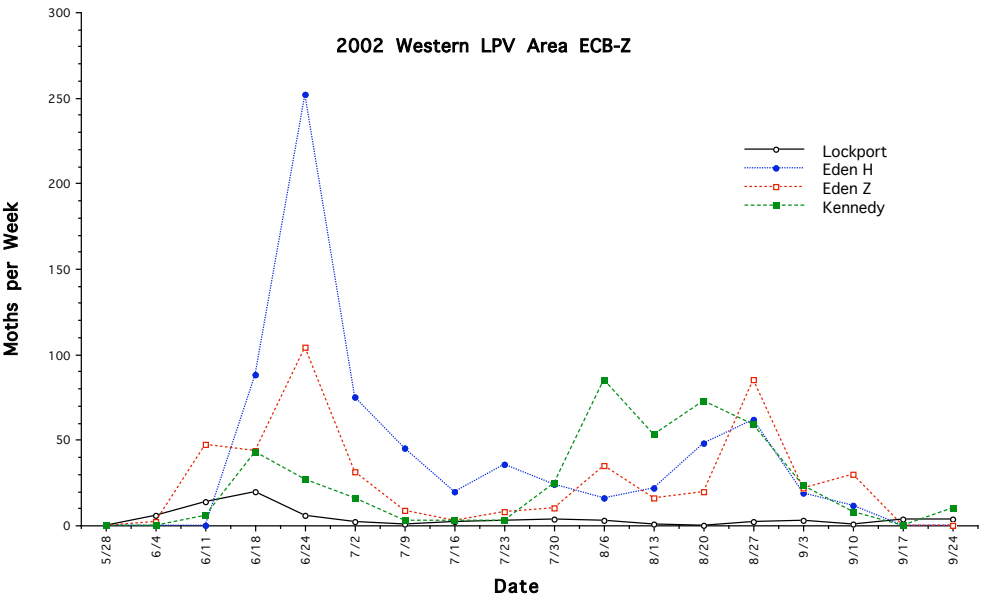
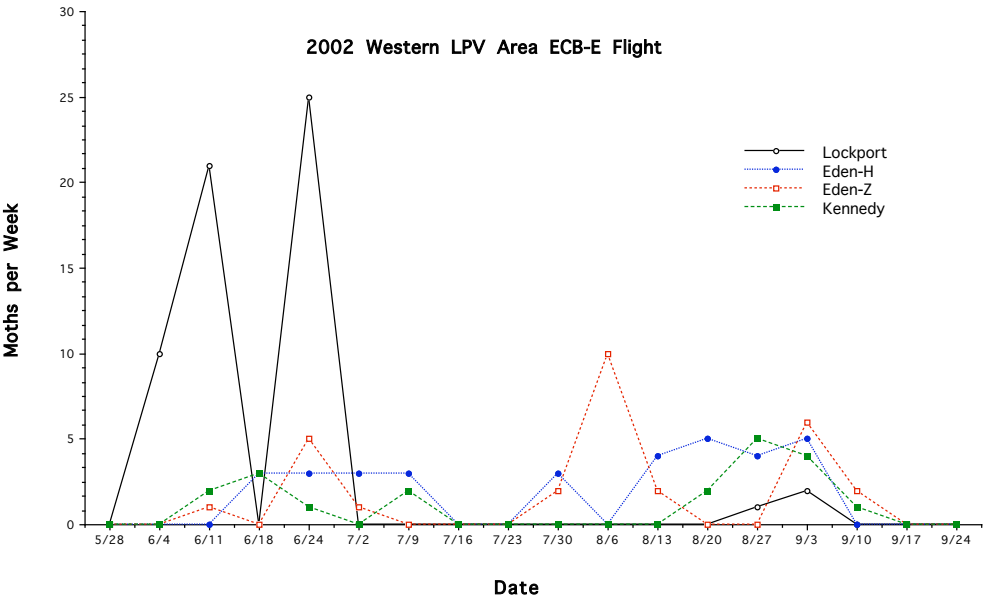


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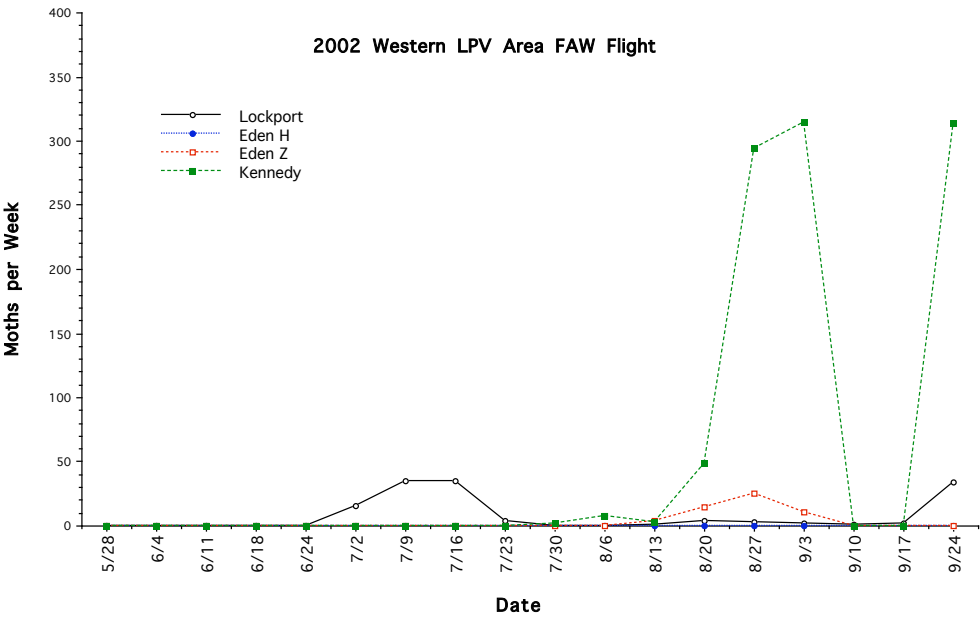
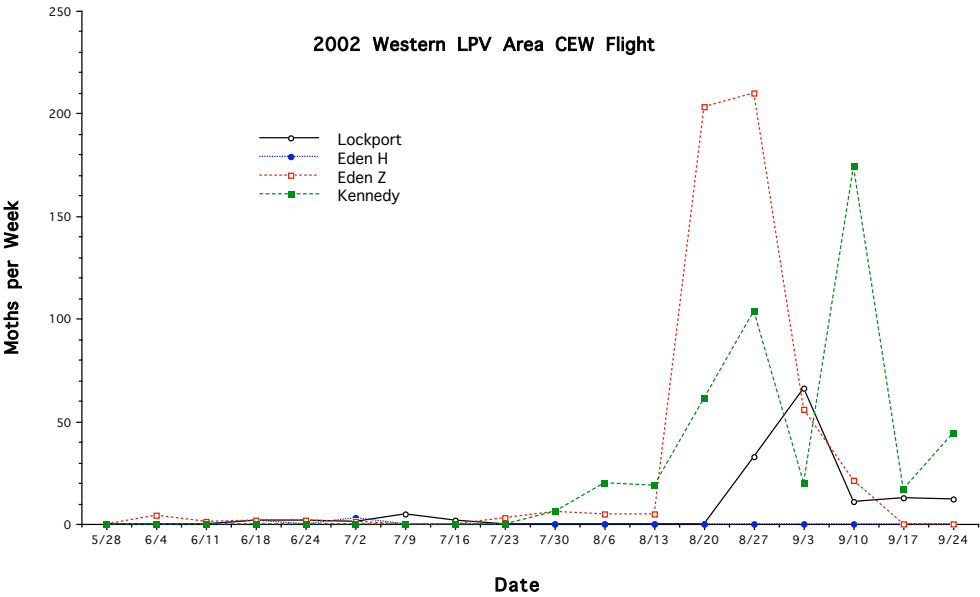


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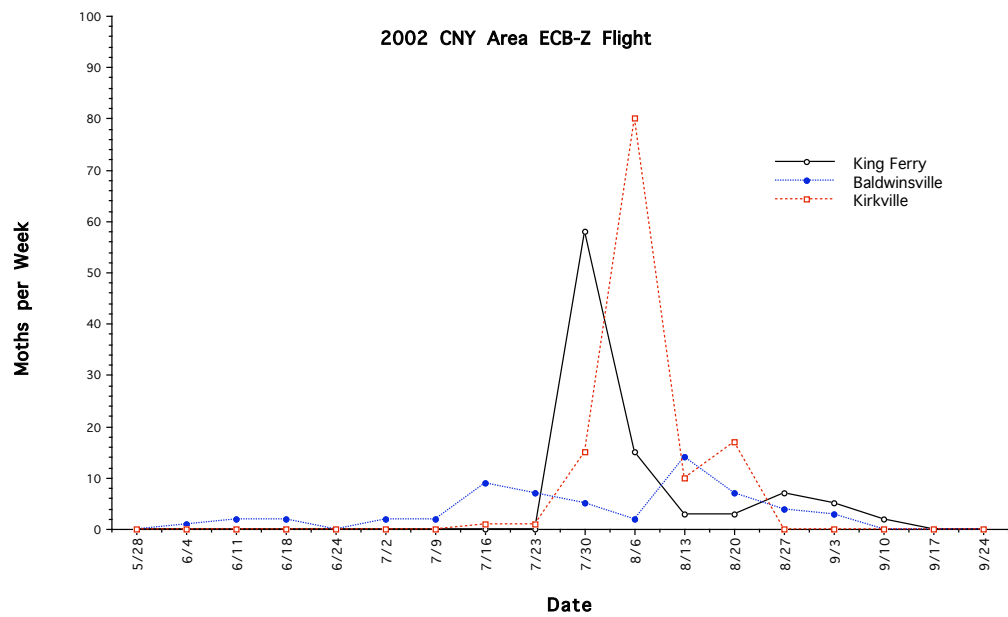
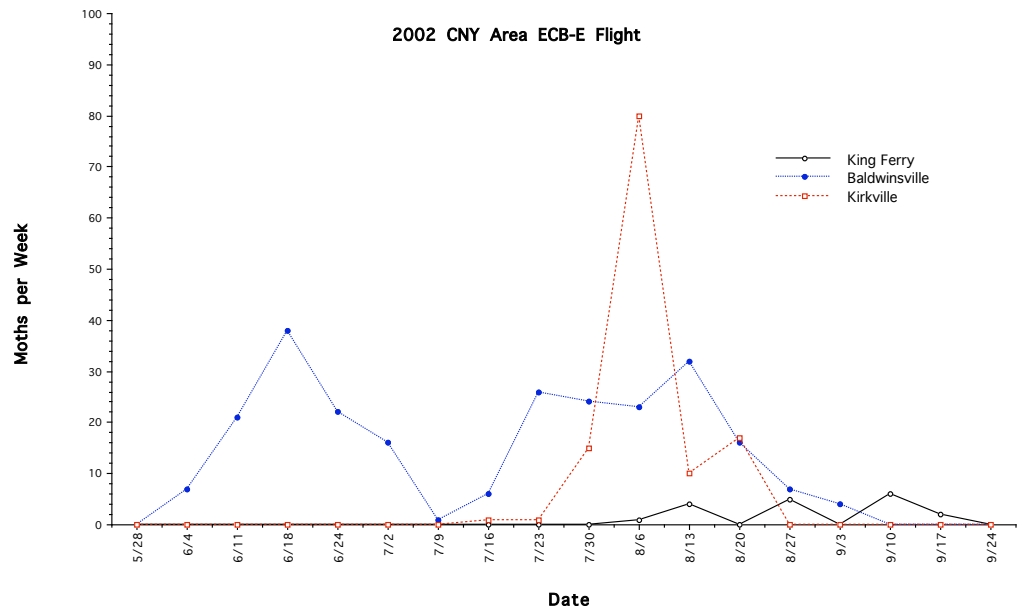


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